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Declaration under Rule 4.17:
— *of inventorship (Rule 4.17(iv)) for US only*

Published:
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(88) Date of publication of the international search report:
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PEPTIDES, ANTIBODIES THERETO, AND THEIR USE IN THE TREATMENT OF CENTRAL NERVOUS SYSTEM DAMAGE

(57) Abstract: The application provides peptides that interact with the inhibitory domains of the myelin proteins Nogo, TNR and MAG. These may be used in the treatment for CNS damage, and for the development of further treatments. Also provided are methods and materials for immunizing subjects against the inhibitory domains of the myelin proteins, for the treatment for CNS damage.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 03/05323

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C07K7/06 C07K14/47 G01N33/68 A61K38/08 C12N7/00
G06F19/00 C12N15/11 A61K39/00 A61K39/395

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C07K A61K G01N C12N G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, CHEM ABS Data, WPI Data, PAJ, Sequence Search, BIOSIS, MEDLINE, EMBL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97/02344 A (INST NAT SANTE RECH MED ;GALEA PASCALE (FR); CHERMANN JEAN CLAUDE) 23 January 1997 (1997-01-23) SEQ ID No. 8;claim 4	5,6, 8-13,26, 27
X	DATABASE EMBL [Online] XP002279773 accession no. Q9BDQ2 Database accession no. Q9BDQ2 01-06-2001 see sequence information	5-11,26, 27
A	WO 01/51520 A (UNIV YALE ;STRITTMATTER STEPHEN M (US)) 19 July 2001 (2001-07-19) the whole document	1-29

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 May 2004	10. 09. 2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Groenendijk, M

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GRANDPRE T ET AL: "Nogo-66 receptor antagonist peptide promotes axonal regeneration" NATURE, MACMILLAN JOURNALS LTD. LONDON, GB, vol. 417, 30 May 2002 (2002-05-30), pages 547-551, XP002963387 ISSN: 0028-0836 cited in the application the whole document	1-29
A	FIEDLER M ET AL: "An engineered IN-1 Fab fragment with improved affinity for the Nogo-A axonal growth inhibitor permits immunochemical detection and shows enhanced neutralizing activity" PROTEIN ENGINEERING, OXFORD UNIVERSITY PRESS, SURREY, GB, vol. 15, no. 11, 20 November 2002 (2002-11-20), pages 931-941, XP002238450 ISSN: 0269-2139 the whole document	
A	F.KARIM E.A.: "Improving axonal growth and functional recovery after experimental spinal cord injury by neutralizing myelin associated inhibitors" BRAIN RESEARCH REVIEWS, vol. 36, 2001, pages 204-212, XP002279772 The whole document; see especially par.6 the whole document	
A	HUANG E.A.: "A therapeutic vaccine approach to stimulate axon regenration in the adult mammalian spinal cord" NEURON, vol. 24, November 1999 (1999-11), pages 639-647, XP002279967 cited in the application the whole document	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 03/05323

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 15,16 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

2. [X] Claims Nos.: 5-15,17-29,53-56(partially)
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

see FURTHER INFORMATION sheet PCT/ISA/210

3. [ ] Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. [ ] As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. [X] No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-29, 53-56 (partially)

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest.

[ ] No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Although claims 15,16 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Continuation of Box I.2

Claims Nos.: 5-15,17-29,53-56(partially)

1)The initial phase of the search as to claims 5-7 revealed a very large number of documents (ca.500) relevant to the issue of novelty. So many documents were retrieved that it is impossible to determine which parts of the claim(s) may be said to define subject-matter for which protection might legitimately be sought (Article 6 PCT). For these reasons, a meaningful search over the whole breadth of the claim(s) is impossible. Consequently, the search has been restricted to peptides up to 60 amino acid residues comprising SEQ ID NO.1
2)The claims 25 and 29 are so-called "two step process claims" comprising two distinct types of process claims: the second process is of the production type but it starts with undefined starting materials from the first process, rendering said claim unclear under Art.6 PCT. Hence only the first process of said claims has been the subject of a search.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-29,53-56(partially)

peptide having SEQ ID NO. 1, peptides up to 60 amino acids comprising it or at least 5 amino acid residues thereof in corresponding positions;their compositions and use in the treatment of CNS damage, spinal cord injury or stroke; their use in designing mimetics inhibiting NOGO, MAG or TN-R; bacteriophage containing them and its use in identifying similar mimetics; use of said mimetics in the same treatment.

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2. claims: 1,3,5,7-15,17-29,53-56(partially)

peptide having SEQ ID NO. 2, peptides up to 60 amino acids comprising it or at least 5 amino acid residues thereof in corresponding positions;their compositions and use in the treatment of CNS damage, spinal cord injury or stroke; their use in designing mimetics inhibiting NOGO, MAG or TN-R; bacteriophage containing them and its use in identifying similar mimetics; use of said mimetics in the same treatment.

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3. claims: 1-29,53-56(partially)

peptide having SEQ ID NO. 3, peptides up to 60 amino acids comprising it or at least 5 amino acid residues thereof in corresponding positions;their compositions and use in the treatment of CNS damage, spinal cord injury or stroke; their use in designing mimetics inhibiting NOGO, MAG or TN-R; bacteriophage containing them and its use in identifying similar mimetics; use of said mimetics in the same treatment.

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4. claims: 1,3,5,7-15,17-29,53-56(partially)

peptide having SEQ ID NO. 4, peptides up to 60 amino acids comprising it or at least 5 amino acid residues thereof in corresponding positions;their compositions and use in the treatment of CNS damage, spinal cord injury or stroke; their use in designing mimetics inhibiting NOGO, MAG or TN-R; bacteriophage containing them and its use in identifying similar mimetics; use of said mimetics in the same treatment.

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5. claims: 1,3,5,7-15,17-29,53-56(partially)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

peptide having SEQ ID NO. 5, peptides up to 60 amino acids comprising it or at least 5 amino acid residues thereof in corresponding positions;their compositions and use in the treatment of CNS damage, spinal cord injury or stroke; their use in designing mimetics inhibiting NOGO, MAG or TN-R; bacteriophage containing them and its use in identifying similar mimetics; use of said mimetics in the same treatment.

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6. claims: 1,3,5,7-15,17-29,53-56(partially)

peptide having SEQ ID NO. 6, peptides up to 60 amino acids comprising it or at least 5 amino acid residues thereof in corresponding positions;their compositions and use in the treatment of CNS damage, spinal cord injury or stroke; their use in designing mimetics inhibiting NOGO, MAG or TN-R; bacteriophage containing them and its use in identifying similar mimetics; use of said mimetics in the same treatment.

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7. claims: 1,3,5,7-15,17-29,53-56(partially)

peptide having SEQ ID NO. 7, peptides up to 60 amino acids comprising it or at least 5 amino acid residues thereof in corresponding positions;their compositions and use in the treatment of CNS damage, spinal cord injury or stroke; their use in designing mimetics inhibiting NOGO, MAG or TN-R; bacteriophage containing them and its use in identifying similar mimetics; use of said mimetics in the same treatment.

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8. claims: 30-37,39-56(partially);38(complete)

nucleic acid vector comprising nucleic acid coding for one or more polypeptide domains selected from the group defined in claim 30 and comprising at least the domain under a); encoded peptide; variants thereof;vaccines containing them and their use; antibody to said peptides and their use in the treament of CNS damage, spinal cord injury or stroke.

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9. claims: 30-37,39-56(partially)

nucleic acid vector comprising nucleic acid coding for one or more polypeptide domains selected from the group defined in claim 30 and comprising at least the domain under b); encoded peptide; variants thereof;vaccines containing them and their use; antibody to said peptides and their use in the treament of CNS damage, spinal cord injury or stroke.

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10. claims: 30-37,39-56(partially)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

nucleic acid vector comprising nucleic acid coding for one or more polypeptide domains selected from the group defined in claim 30 and comprising at least the domain under c); encoded peptide; variants thereof;vaccines containing them and their use; antibody to said peptides and their use in the treament of CNS damage, spinal cord injury or stroke.

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11. claims: 30-37,39-56(partially)

nucleic acid vector comprising nucleic acid coding for one or more polypeptide domains selected from the group defined in claim 30 and comprising at least the domain under d); encoded peptide; variants thereof;vaccines containing them and their use; antibody to said peptides and their use in the treament of CNS damage, spinal cord injury or stroke.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 03/05323

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